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10/625,386	07/23/2003	Sundeep Chauhan	STL10986	2363

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EXAMINER	
NGUYEN, HAI L	
ART UNIT	**PAPER NUMBER**
2816	

DATE MAILED: 02/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/625,386	CHAUHAN, SUNDEEP	
	Examiner	Art Unit	
	Hai L. Nguyen	2816	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 November 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,7-12,16-22,25 and 26* is/are rejected.

7)☒ Claim(s) *4-6,13-15,23 and 24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 November 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *Attached copy*.

DETAILED ACTION

Response to Amendment

1. The amendment received on 11/28/2005 has been reviewed and considered with the following results:

As to the objection to claim 4, Applicant's amendments and clarifications have overcome the objection, as such; the objection has been withdrawn.

As to the rejection to claims 1, 8, and 9, under 35 U.S.C. 112, 2nd paragraph, Applicant's amendments and clarifications have overcome the objection overcome the rejections, as such; the rejections have been withdrawn.

As to the prior art rejections to the claims made in the previous Office Action, mailed on 7/28/2005. Applicant's amendments have overcome the rejections, as such; the prior art rejections have been withdrawn. However, Applicant's amendments necessitate new grounds of rejection as set forth below.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3, 7, 10-12, 16, 17, 20-22, 25, 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Staszewski et al. (US Pat. 6,429,693; previously cited).

With regard to claim 1, Staszewski et al. discloses in Figs. 1-8 an apparatus comprising a phase/frequency comparator circuit (200) that is configured to generate a phase error (202) responsive to a transition location signal (TDC_RISE, TDC_FALL; by given the broadest reasonable interpretation that is the transition location signal, explanations supporting are addressed in detail below in the "Response to Arguments" paragraphs).

With regard to claim 7, the phase/frequency comparator further comprises a phase detecting stage that generates a result (Q(0)-Q(L-1)) that represents an instantaneous phase difference; and encoding circuitry (NORM) coupled to the phase detecting stage; wherein the encoding circuitry converts a result of the phase detecting stage into a numerical phase difference value (PHF).

With regard to claim 2, the phase detecting stage further comprises a tapped delay line (502s) having a plurality of outputs and configured to receive a first signal (CKV); and a parallel latch coupled to the plurality of outputs of the tapped delay line and configured to receive a second signal (110), wherein the parallel latch stores the values of the plurality of outputs of the tapped delay line in response to a transition in the second signal; and wherein the encoding circuitry converts the values stored in the parallel latch into a numerical phase difference value.

With regard to claim 3, the phase/frequency comparator further comprises an accumulator (102) coupled to the encoding circuitry, wherein the accumulator adds the numerical phase difference value to a value stored in the accumulator to obtain an accumulated phase error (PHE).

With regard to claim 10, Staszewski et al. discloses in Figs. 1-8 a phase locked loop comprising a controllable oscillator (103); and a phase/frequency comparator includes a phase

detecting stage (201); encoding circuitry (NORM) coupled to the phase detecting stage; and an accumulator (102) coupled to the encoding circuitry.

With regard to claim 11, the phase detecting stage further comprises a tapped delay line (502s) having a plurality of outputs and configured to receive a first signal (CKV); and a parallel latch coupled to the plurality of outputs of the tapped delay line and configured to receive a second signal (110), wherein the parallel latch stores the values of the plurality of outputs of the tapped delay line in response to a transition in the second signal; and wherein the encoding circuitry converts the values stored in the parallel latch into a numerical phase difference value (PHF).

Claim 12 is similarly rejected; note the above discussion with regard to claim 3.

With regard to claim 16, the forward path includes additional control circuitry (105).

With regard to claim 17, the reference also meets the recited limitation in the claim.

With regard to claim 20, Staszewski et al. discloses in Figs. 1-8 a corresponding method comprising the steps of generating a snapshot ($Q_{(0)}$-$Q_{(L-1)}$) of a first signal (114) in response to receiving a second signal (110); and mapping the snapshot to a numerical phase difference value (PHF) that is generated responsive to a signal that corresponds to a transition location of the first signal (TDC_RISE, TDC_FALL).

With regard to claim 21, the method further comprises the steps of combining the numerical phase difference value (PHF) with a value in an accumulator (102) to obtain a new accumulator value; and presenting the new accumulator value (PHE) as a result of a phase comparison.

With regard to claim 22, the method further comprises the steps of propagating the first signal (114) through a tapped delay line (502s); latching outputs of the tapped delay line in a parallel latch (504s) in response to a transition in the second signal (110) to obtain the snapshot of the fist signal.

With regard to claims 25 and 26, controlling an output frequency (RF OUT) of an oscillator (103) using the result of the phase comparison, wherein the first signal (CKV) is an output of the oscillator (RF OUT through 106).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Staszewski et al. in view of Brachmann et al. (US 6,351,154; previously cited).

With regard to claim 8, the above discussed the apparatus of Staszewski et al. meets all of the claimed limitations except that Staszewski et al. does not disclose the apparatus is implemented on a single monolithic integrated circuit. Brachmann et al. teaches in Fig.5 a similar apparatus can be implemented as integrated circuit (column 4, lines 20-33) as recited in the claim. Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention was made to implement that teaching with the apparatus of Brachmann et

al. for the advantage of reducing additional cost when implemented within other circuits, e.g. ASIC, PLD, FPGA, PLL etc.

Claim 18 is rejected for similar motivation; note the above discussion with regard to claim 8.

6. Claims 9 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Staszewski et al.

With regard to claims 9 and 19, the above discussed circuit of Staszewski et al. meets all of the claimed limitations except for the intended use as implemented in a field programmable gate array. However, it is noted that the reference circuit has the ability to be used in this environment as well. It would have been obvious to one of ordinary skill in the art at the time of applicant's invention was made to implement that circuit taught by Staszewski et al. in the field programmable gate array for the advantage of saving power consumption from the circuit.

Response to Arguments

7. Applicant argues that the transition signal of Staszewski is observed randomly without relating its occurrence to any previously defined reference point and must meet the meaning, which is consistent with the term's explicit definition and usage in the specification. This argument is not persuasive since there is no explicit definition of the *transition location signal.* For example, the term "This signal bit may be referred to as a transition location signal." is considered as a permissible term rather than a clear definition. During patent examination, the pending claims must be given their "broadest reasonable interpretation consistent with the specification." In re Hyatt, 21 1 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000).

While the claims of issued patents are interpreted in light of the specification, prosecution history, prior art and other claims, this is not the mode of claim interpretation to be applied during examination. During examination, the claims must be interpreted as broadly as their terms reasonably allow. In re American Academy of Science Tech Center, WL 1067528 (Fed. Cir. May 13, 2004) (The USPTO uses a different standard for construing claims than that used by district courts; during examination the USPTO must give claims their broadest reasonable interpretation). This means that the words of the claim must be given their plain meaning unless applicant has provided a clear definition in the specification. In re Zletz, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989); Chef America, Inc. v. Lamb-Weston, Inc., 358 F.3d 1371, 1372, 69 USPQ2d 1857 (Fed. Cir. 2004). Thus, by given the broadest reasonable interpretation, TDC_RISE, TDC_FALL is the transition location signal, since the snapshot taken by the parallel latches (504's in Fig. 5 of Staszewski) directly indicates the location of the feedback clock 114 through the tapped delay line 502's precisely at the occurrence of the feedback transition signal 110. Therefore, the signal TDC_RISE, TDC_FALL clearly is the transition location signal. Furthermore, Applicant argues that referring to FIG. 3 and the description thereof, in some embodiments *the N-bit tapped delay line 300 initializes at the beginning of each clock reference 301 cycle*, page 14. However, Examiner respectfully disagree because Fig. 3 clearly shows that the input clock signal 301 is continuously fed to N-bit tapped delay line 300, N-bit tapped delay line 300 has N outputs, each of which duplicates input clock signal 301, but with incrementally increasing propagation delays. Therefore, nothing in the specification indicates that *the N-bit tapped delay line 300 initializes at the beginning of each clock reference 301 cycle.*

8. Applicant argues that the encoding circuitry must be consistent with the term's usage in the specification, page 19. This argument is not persuasive since there is no explicit definition of the *encoding circuitry*. Therefore, the term *encoding circuitry* is not entitled to any specific definition as applicant's argument but can be interpreted as broadly as it term reasonably allow by the skilled artisan. Furthermore, Applicant argues that the circuit (NORM) of Fig. 2 of Staszewski is not an encoding circuitry. This argument is not persuasive because one skilled in the art would recognize that an encoder generally convert an input digital signal into its equivalent binary code (see attached copy). The circuit (NORM) of Fig. 2 of Staszewski is an encoding circuitry since it converts the input digital signal into its equivalent binary code (column 5, line 64 through column 6, line 43).

9. Applicant argues that Staszewski cannot sustain a Section 102 rejection of claim 20 because it fails to identically disclose the signal that corresponds to a transition location of the first signal, page 20. This argument is not persuasive for the reasons discussed above in paragraph 7.

Allowable Subject Matter

10. Claims 4-6, 13-15, 23, and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record fails to disclose or fairly suggest a phase/frequency comparator (as shown in Fig. 3), and a method of use thereof, as recited in claims 4, 13, and 23, having specific structural limitations such as an encoding circuitry includes an edge detector (304) coupled to the

parallel latch (300, 302); and a weighted encoder (306), wherein the edge detector outputs a transition location signal that indicates a location of a transition in the values stored in the parallel latch, and wherein the weighted encoder outputs a weighted numerical value that corresponds to the transition location signal; and being configured in combination with the rest of the limitations of the base claims and any intervening claims.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai L. Nguyen whose telephone number is 571-272-1747. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Callahan can be reached on 571-272-1740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

13. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HLN
February 13, 2006

TIMOTHY P CALLAHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

Attached Copy

encapsulate — To embed electronic components or other entities in a protective coating, usually done when the plastic encapsulant is in fluid state so that it will set in solid form as an envelope around the work.

encapsulated relay — A relay embedded in a suitable potting compound.

encapsulating — 1. Coating by dipping, brushing, spreading, or spraying an electronic component or assembly. An encapsulated unit usually retains its original geometry. 2. Enclosing an article in an envelope of plastic by immersing the object in a casting resin and allowing the resin to polymerize or, if hot, cool.

encapsulating material — A composition primarily adapted for use on or around an electrical device to provide protection from the surrounding environment.

encapsulation — 1. A protective coating of cured plastic placed around delicate electronic components and assemblies. It is similar to potting, except the cured plastic is removed from the mold. The plastic therefore determines the color and surface hardness of the finished part. The molds may be made of any suitable material. 2. An embedding process using removable molds or other techniques in which the insulating material forms the outer surfaces of the finished unit. 3. The process of either (*a*) applying a conformal coating by dipping an object in a high viscosity or thixotropic material, or (*b*) using containment and a low viscosity material to provide a relatively thin protective encasement (50 to 100 mils or 1.27 to 2.54 mm) to a part or assembly.

encased control — A self-contained motor speed/torque control completely housed in an enclosure. Switching, indicating, and adjusting devices are provided on the outside of the enclosure. Unit portability, safety, and component protection are leading assets of this design.

encipher — To convert a message from ordinary language into a secret form. *See also* encode

enciphered facsimile communications — Communications in which security is provided by mixing pulses from a key generator with the output of a facsimile converter. Plain text is recovered at the receiving terminal by subtracting identical key pulses. Unauthorized persons are unable to reconstruct the plain text unless they have an identical key generator and they know the daily key setting.

enclosed relay — A relay in which both the coil and the contacts are protected from the environment.

enclosed switch — Switch having internal parts protected by a housing. The enclosed switch can be dust proof, moisture proof, oil or contamination proof, or hermetically sealed.

enclosure — 1. An acoustically designed housing or structure for a loudspeaker; also any cabinet for a component, electrical, or electronic device. 2. A surrounding case designed to provide a degree of protection for equipment against a specified environment and to protect personnel against accidental contact with the enclosed equipment.

encode — Also called encipher. 1. To use a code, frequently one composed of binary numbers, to represent individual characters or groups of characters in a message. 2. To change from one digital code to another. If the codes are greatly different, the process usually is called conversion. 3. To substitute letters, numbers, or characters, usually with the intention of hiding the meaning of the message except from persons who know the encoding scheme. 4. The process of converting an event such as a switch closure into a form suitable for transmission over a communication channel.

encoder — 1. A device used to electronically alter a signal so that it can only be viewed on a receiver equipped with a special decoder. 2. Any device that modifies information into the desired pattern or form for a specific method of transmission. 3. An electromechanical device that can be attached to a shaft to produce a series of pulses to indicate shaft position; when the output is differentiated, the device is an accurate tachometer. (It is fundamentally oriented to digital rather than analog techniques.) An encoder contains a disc with a printed pattern; as the disc rotates, it makes and breaks a circuit. The more make-and-break cycles per revolution, the better the resolution. 4. A digital-to analog converter. 5. Circuitry in a quadriphonic sound system that, by matrixing in the recording process, turns four signals into two for inscribing, stereo style, on each wall of the record groove. 6. Electromechanical device that transforms analog motion into digital electrical signals. The outputs are incrementally constant for uniform motion characterized by a staircase function, where the output remains constant for a small range of input values. 7. A digital device for converting an input digital signal into its equivalent binary code. *See also* code converter.

encoder accuracy — The maximum positional difference between the input to an encoder and the position indicated by its output; includes both deviation from theoretical code transition positions and quantizing uncertainty caused by converting from a scale having an infinite number of points to a digital representation containing a finite number of points.

encoding — 1. Translation of information from an analog or other easily recognized form to a coded form without a significant loss of information. 2. The process of converting an event such as a switch closure into a form suitable for transmission over a communication channel. 3. The scrambling of a signal to prevent viewing of a program by nonsubscribers.

encryption — 1. A change made to data, code, or a file such that it can no longer be read or accessed without processing (or unencrypting). 2. The technique of modifying a known bit stream on a transmission line to make it appear like a random sequence of bits to an unauthorized observer.

end-around carry — A computer operation in which the carried information from the left-most bit is added to the results of the right-most addition. It is used for ones complement and nines complement arithmetic.

end-around shift — In a computer, the movement of characters from one end of the register to the other end of the same register.

end bell — An accessory that is similar to a cable clamp and attaches to the back of a plug or receptacle. It serves as an adapter for the rear of connectors. Some angular end bells have built-in cable clamps. Angular end bells up to 90° are available. *See also* end shield.

end bracket — *See* end shield.

end-cell rectifier — A small trickle-charge rectifier for maintaining the voltage of storage-battery end cells.

end cells — Cells that can be switched in series with a storage battery to maintain the output voltage of the battery when it is not being charged.

end central office — The local central telephone office that interconnects customer lines and trunks. It is designated a Class 5 office in the DDD or intertoll network.

end distortion — A shifting of the ends of all marking pulses of start-stop teletypewriter signals from their proper positions relative to the beginning of the start pulse.

end effect — The capacitive effect at the ends of a half-wave antenna. To compensate for this effect, a dipole is cut slightly shorter than a half wave.

end effector — Term
a hand, welding gun, pai
end finish — Surface
tor face.
end-fire array — A
having its direction of m
long axis of the array.
end instrument — A
nal of a loop and capable
into electrical signals or
ing, signal-converting, an
transmitting and/or recei
endless loop rec
which a nonremovable m
and the tape runs in a co
end mark — In a cor
indicate the termination
endocardiac electr
maker.
endodyne recepti
to reception of unmodu
tube circuit having a loc
slightly different from th
beat signal in the audio r
end-of-block signa
defines the end of a bloc
end of file — Abbrev
program after the last byt
operating system that no
end-of-file mark —
indicating that the last re
end of message —
It can be indicated by a
ASCII code set; by an
time interval; or by a pa
and data, as is done on n
end of tape — The p
the system or operator is
end of the tape is approac
(7.62 m) from the actual
mm) computer tape and
from the halt marker on
end-of-tape marke
netic tape to indicate the
area. It may be a photore
tion of tape, or a particul
end-of-transmissio
message; used to signa
Contains the same infor
additional data for traffic
endogeneous varia
is determined by relation
See also exogenous varia
end-on armature
moves in the direction
face at the end of the cor
end-on direction
antenna that radiates chi
the antenna elements are
endoradiograph —
tion of internal organs and
materials.
endoradiosonde —
for detecting and transmit
gastrointestinal tract or o
endothermic — A te
tion in which heat is abs
endothermic reacti
panied by the absorption